

SIEMENS

POWERMOBIL

SP

System - Manual

Start-up Instructions

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Required tools, measurement and auxiliary devices

NOTE

All tools, measurement and auxiliary devices with the exception of those marked "**", are listed along with their specifications in the STC (Service Tools Catalogue).

- Tool kit *
- Protective conductor meter
e.g. Safety tester Unimet 1100 51 38 727 Y0766
- Device leakage current meter
e.g. Safety tester Unimet 1100 51 38 727 Y0766
- Dynamic test kit 37 90 156 X1963
- Cu filter set 44 06 120 RV090
- Densitometer
e.g. DensiX-LE 52003 49 51 286 Y0388
- X-ray filter set, 25 mm AL
e.g. 97 98 596 G5321
- Resolution tests 28 71 820 RE999

Safety information

General safety information (on available documents)



Danger of possibly fatal physical injury and property damage!

Observe

- the product-specific safety information in these instructions,
- the general safety information in instructions TD00-000.860.01... and
- the general safety information according to ARTD Part 2.

Noncompliance can lead to death, physical injury or property damage.

General electrical safety information



Electrical voltage!

Noncompliance can lead to death, physical injury or property damage.

Once the system covers have been removed, voltage-conducting parts become contactable. To prevent danger, always disconnect the system from the line voltage before removing the covers. To do this, pull the power plug or switch the system power supply off and secure the power switch against accidental activation.

If an uninterruptible power supply (UPS) is installed in the system, the power supply of the UPS must be switched free of voltage in addition or the voltage output plug must be pulled out.

If service in connection with electrical voltage is required, the generator safety information in instructions TD00-000.860.01... must be observed.

Safety information for radiation

WARNING

X-ray radiation!

Noncompliance can lead to illnesses, irreversible damage to body cells and the genotype, severe injuries and even death.

In work on the system in which radiation must be released, the radiation protection directives and the rules for radiation protection according to ARTD 02.771.02 must be complied with.

Note:

- Use available radiation protection devices.
- Wear radiation protection clothing (lead apron).
- Keep your distance from the radiation source as large as possible.
- Release radiation only if necessary.
- Set the radiation activity as low as possible.
(low kV and mA values, short radiation time)
- Release radiation for as short a time as possible.

Checks in which radiation must be released are identified by the radiation warning symbol.



Laser light localizer option

ATTENTION

Laser radiation!

Non-compliance can lead to injuries, especially of the retina of the eye and thus to irreversible impairment of vision.

This product contains lasers of class 2.

(USA: Laser class 2)

Observe the safety information of the ARTD-002.731.03.

When using the laser light localizer do not look directly into the laser beam.

NOTE

There is no direct danger for the eye
(lid closing reflex of the eyes).

Nevertheless, do not look directly into the laser beam.

Information on logbook

The logbook is located in the monitor carriage behind the keyboard. To access it, remove the cover on the back of the monitor trolley.

Notes on adapting the power plug to the local conditions

The customer can have the power plug on the supplied power cable replaced with an appropriate local plug by an electrotechnician, provided that:

- the power plug used can transfer the power required for operating the system (see current and voltage ratings stated on the supply voltage plate on the back of the monitor trolley) and
- the required internal line resistance is obtained (see Planning Guide of the system) and
- fuse selectivity is ensured in compliance with the relevant national standards.

In addition, the customer needs to make sure (e.g. by labeling or constructive measures) that the system is not connected to an unsuitable mains supply.

Finally, protective conductor tests must be performed and documented.

Information on line voltage

The line voltage values for POWERMOBIL upon delivery are shown on the supply voltage plate or in the user manual.

If necessary, adapt the system to the local conditions in accordance with the service instructions / wiring diagram.

Ensure compliance with the "Information on device leakage current."



Electrical voltage!

Non-compliance can lead to severe physical injuries up to death!

The internal uninterruptible power supply of the system (UPS) supplies some components with voltage - even with the system switched off or the mains plug of the system withdrawn.

Before the system is programmed to the local mains voltage / mains frequency, separate the system from the power supply (pull out the mains plug) and in addition pull out the voltage output plug of the UPS.

Notes on the protective conductor resistance test

Observe the statements in the safety engineering rules for installation and maintenance (ARTD-002.731.17...).

The protective conductor resistance of 0.2 ohms must not be exceeded.

First measured value

In system which are delivered from the factory completely tested, the protective conductor resistance test has already been performed and the measured values have been recorded in the test report of the system.

The measurements have been performed with the measuring methods and equipment recorded in the test report of the system.

The test report is an integral part of the supplied documentation.

If during the installation of the system no covers were opened and no additional components (e.g. options) were installed or modified, then the values recorded in the test report with statement of the measuring point (e.g. cover of basic unit or cover of image intensifier) can be transferred as first measured values into the protective conductor report.

If during the installation of the system the mains plug was changed, covers were removed or additional components installed or modified, then the values stated in the report are invalid.

The values must be marked as invalid. For this purpose cross through the values, enter the note "Value invalid" and confirm with name, date and signature.

The protective conductor test must be performed anew after the completion of all work.

In systems without reported measured values for the protective conductor test in the test report of the system, the protective conductor test must be performed after completion of all work.

Measurement

Measurement must be performed according to DIN VDE 0751, Part 1 (see ARTD Part 2). In this case measure the protective conductor resistance in the normal operating condition of the system to all conductive parts that can be touched.

It must be assured that control cables or data cables between the components of the system do not simulate any protective conductor connection.

During the measurement the power cable and additional connection cable with integrated protective conductor (e.g. monitor cable between basic unit and monitor trolley) must be moved section by section to detect cable breaks.

The protective conductor resistance must not exceed 0.2 ohms.

The values must be recorded as first measured values in the protective conductor resistance report stating the measuring points.

In addition the measuring method and the measuring instrument used (designation and serial number) must be documented.

Separate the page with the report from these instructions and file it in the system folder of logbook, "Reports" register.

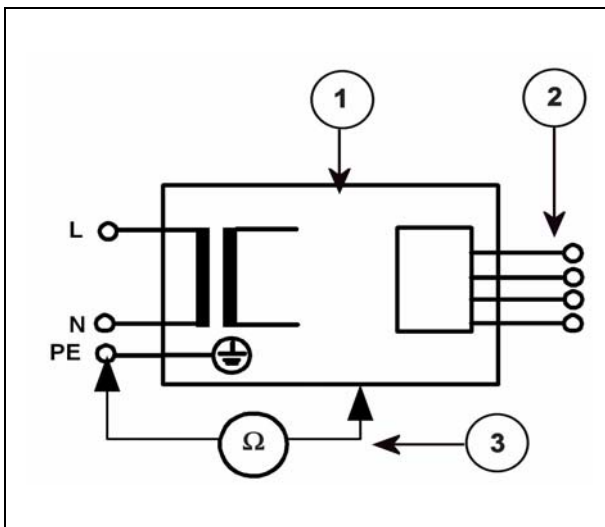


Fig. 1 Measuring circuit for measuring the protective conductor resistance in systems that are separated from the power supply according to DIN VDE 0751-1:2001-10, Fig. C2.

1 = System

2 = Application part (not available)

3 = Measuring arrangement (integrated in the measuring instrument)

Repeat measurement

Perform the protective conductor resistance measurement anew in the case of maintenance or repairs.

Document and assess the values determined in the repeat measurement.

Perform the measurement according to DIN VDE 0751, Part 1 (see ARTD part 2). In this case measure the protective conductor resistance in the normal operating condition of the system to all conductive parts that can be touched.

It must be assured that control cables or data cables between the components of the system do not simulate any protective conductor connection.

During the measurement the power cable and additional connection cable with integrated protective conductor (e.g. monitor cable between basic unit and monitor trolley) must be moved section by section to detect cable breaks.

The protective conductor resistance must not exceed 0.2 ohms.

The values determined in the repeat measurement must be recorded in the protective conductor resistance report stating the measuring points and assessed.

In addition the measuring method and the measuring instrument used (designation and serial number) must be documented.

NOTE

For the assessment the first measured value and the values documented during previous maintenance or safety checks must be compared with the measured values.

An abrupt rise of the measured values, even if the limit of 0.2 ohms is not exceeded, indicates defects in the protective conductor connections (protective conductor or contacting).

Notes on device leakage current measurement

Observe the statement in the safety engineering rules for installation and maintenance (ARTD-002.731.17...).

**WARNING**

Electrical voltage!

Non-compliance can lead to severe injuries up to death.

The device leakage current measurement may be performed for units of protective class I only after the protective ground wire test has been passed.

First measured value

In system which are delivered from the factory completely tested, the device leakage current test has already been performed in the factory and the measured values have been recorded in the test report of the system.

The measurements have been performed with the line voltage, line frequency, measuring method and equipment recorded in the test report of the system.

The test report is an integral part of the supplied documentation.

On agreement of the line voltage and the line frequency, the value recorded in the test report must be transferred as first measured value into the device leakage current report.

If the local line voltage or line frequency deviates from the condition on delivery of the system, or if no measurement was performed and recorded in the factory, then perform the device leakage current measurement.

If the local line voltage or line frequency deviates from the condition on delivery of the system, then the values stated in the test report are invalid.

The values must be marked as invalid. The reason for the re-determination of the first measured value must be documented and confirmed with date, name and signature.

The system must be set / programmed to the local line voltage / line frequency before the measurement.

In systems without recorded measured values for the device leakage current measurement in the test report of the system, perform the device leakage current measurement after completion of all work.

Measurement

Perform the measurement according to DIN VDE 0751, Part 1 (see ARTD-002.731.17...) and record the determined value as first measured value.

Measurement of the device leakage current according to the differential current method (measuring arrangement according to Fig. 2) should be preferred, since no danger for the measuring person and other persons arises during the measurement.

However, observe the minimum resolution of the leakage current measuring instrument and additional manufacturer's data which restrict the use of the measuring instrument.

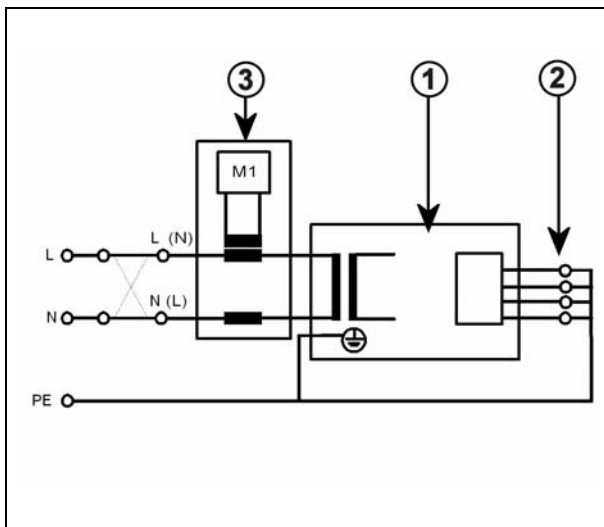


Fig. 2 Measuring circuit for measuring the device leakage current according to the differential current method according to DIN VDE 0751-1:2001-10, Fig. C6 for protective class I.

1 = System

2 = Application part (not available)

3 = Measuring arrangement (integrated in the measuring instrument)

If the direct measurement of the device leakage current is used (measuring arrangement according to Fig. 3), the system must be set up insulated during the measurement and must not be touched during the measurement.

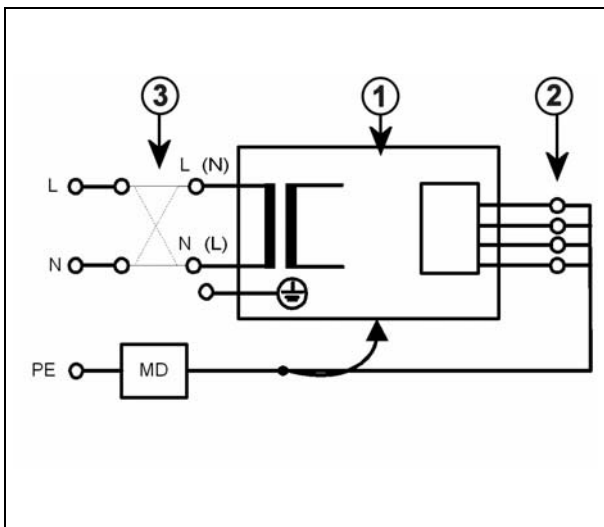


Fig. 3 Measuring circuit for the direct measurement of the device leakage current according to DIN VDE 0751-1:2001-10, Fig. C5 for protective class I.

1 = System

2 = Application part (not available)

3 = Measuring arrangement (integrated in the measuring instrument)

WARNING

Electrical voltage!

Non-compliance can lead to severe injuries up to death.

In the direct measurement of the device leakage current (measuring arrangement according to Fig. 3) no housing parts of the system may be touched during the measurement.

Access to the system for third persons must be prevented.

The system must be switched on during the measurement. Measuring instruments with automated measuring sequence must therefore be set to manual measurement.

Enter the highest value as first measured value in the device leakage current report.

This value must not exceed the permissible leakage current values according to DIN VDE 0751-1:2001-10, Table F.1, line "device leakage current for devices according to the remarks 1 and 3", of 2.5 mA.

Measure and record the current line voltage. If the measured line voltage deviates from the nominal voltage, correct the measured value to the value that corresponds to a measurement at the nominal value of the line voltage. Document this in addition.

Document the measuring method (differential measurement or direct measurement) and the used measuring equipment (designation and serial number).

Separate the report page from these instructions and file it with the existing reports in the system folder or logbook.

Repeat measurement

In the case of maintenance or repairs in the primary circuit of the power supply unit (e.g. repairs to the power-up circuit or replacement of the mains filter), perform the device leakage current measurement anew.

The same measuring conditions as in the first measurement apply.

Document the highest value determined in the repeat measurement in the available device leakage current report and assess it.

This value must not exceed the permissible leakage current values according to DIN VDE 0751-1:2001-10, Table F.1, line "device leakage current for devices according to the remarks 1 and 3", of 2.5 mA.

Measure and record the current line voltage. If the measured line voltage deviates from the nominal voltage, correct the measured value to the value that corresponds to a measurement at the nominal value of the line voltage. Document this in addition.

Document the measuring method (differential measurement or direct measurement) and the used measuring equipment (designation and serial number).

HINWEIS

For the assessment the first measured value and the values documented during previous maintenance or safety checks must be compared with the measured values.

An abrupt rise of the measured values, even if the limit of 2.5 mA is not exceeded, indicates defects in the primary circuit of the mains voltage supply (insulation damage, moisture damage, defective interference suppressor, etc.).

Checking the temperature indicator

Check the temperature indicator on the exterior housing of the I.I.

- If the inner square field of the indicator is white, the I.I. was not subject to excess temperature. Remove the temperature indicator.
- If the indicator is discolored (inner field black), proceed according to IQ document RXD0-000-038.01...

Visual checks

- The system shows no damage.
- All parts are correctly fastened.
- All moving parts are free running.

Options

Options that have not yet been installed in the factory must be installed and started up in accordance with their enclosed documents.

Information on country-specific programming



Fluoroscopy time limit

According to E DIN IEC 62B/293/CDV, the fluoroscopy time limit is programmed to switch off radiation after 10 minutes of fluoroscopy. The buzzer sounds after 5 minutes of fluoroscopy. In countries not subject to E DIN IEC 62B/293/CDV, the fluoroscopy time limit with automatic switch off of radiation can be set to 5 minutes (buzzer sounds after 4.5 minutes of fluoroscopy) or 10 minutes (buzzer sounds after 9.5 minutes of fluoroscopy), or no automatic switch off of radiation can be selected (buzzer sounds after 4.5 minutes of fluoroscopy) using the service PC. Compliance with the applicable laws of the country must be ensured.



Audible signal for fluoroscopy

The audible signal for fluoroscopy is disabled when the POWERMOBIL is delivered. Therefore, an audible signal will not sound during fluoroscopy. If country-specific regulations require that an audible signal sound during fluoroscopy, it can be programmed via the service PC. Corresponding parameter: "Buzzer and block time settings" - "Buzzer mode (FL / IFL / DR)".

Memoskop Fast, country-specific configurations

The following parameters can be programmed to comply with country-specific requirements and should be modified accordingly on-site:

User Setup:	"set date / time" "hospital name"
Programming:	Refer to the operating instructions for POWERMOBIL:
Technical Setup:	"Date / Time format" "Language"

Programming the parameters:
Refer to the MEMOSKOP Fast Service Software, Helpfile.

Function tests

(Operation of the POWERMOBIL, refer to the Operating instructions)t

- Electronics cabinet movements and movements of the C-arm system
- Mechanical functions of the monitor trolley
- Semi-transparent slot collimator and iris collimator
- Display of semi-transparent slot collimator and iris collimator
- Image intensifier format switch-over
- Image reversal
- Image position and image rotation
- Image storage functions
- Fluoroscopy / Pulsed Fluoroscopy
- Image storage (ATB and LIH functions)
- Digital Radiography DR
- Digital Cine Mode DCM
- Subtraction option
- Roadmap option
- Dicom bridge option
- Dicom Connect option
- Laser light localizer option
- Area dose product option: indication $\text{cGy} \cdot \text{cm}^2$
- Videoprinter option
- Videorecorder option

Recorded tests

The required certificates and directions are filed with the logbook.

Organ programs



- If set organ programs were changed on a POWERMOBIL system, it is advisable to print out the programmed values and enter them in the chapter "Curves and Diagrams" of the Operating Instructions.



Image Quality Quick Test



- Perform the image quality test.



Lifting column and C-arm movements

- In the POWERMOBIL check the movements of the lifting column and of the C-arm system and confirm them in the report (Chapter 2 of these instructions). Refer to the operating instructions in the Basic system register, under system movements.

Protective conductor test

Observe the information on the protective conductor test in these instructions.



- If performance of the protective conductor test is required, perform this with closed system according to ARTD-002.731.17... . The protective conductor resistance must not exceed 0.2 ohms.
- Record the determined values as first measured values in the protective conductor resistance report (Chapter 3 of these instructions) stating the measuring points.
- In addition document the measuring method and the measuring instrument used (designation and serial number).
- Separate the page with the report from these instructions and file it in the system folder or logbook, "Reports" register.

Device leakage current measurement

Observe the information on the device leakage current measurement in these instructions.

- If performance of the device leakage current test is required, perform this with closed system according to ARTD-002.731.17... . The limit of 2.5 mA must not be exceeded.

⚠ WARNING

Electrical voltage!

Non-compliance can lead to severe injuries up to death.
In the direct measurement of the device leakage current (measuring arrangement according to Fig. 3) no housing parts of the system may be touched during the measurement.
Access to the system for third persons must be prevented.



- The system must be switched on during the measurement. Measuring instruments with automated measuring sequence must therefore be set to manual measurement.
- Enter the highest value as first measured value in the device leakage current report (Chapter 3 of these instructions).
- This value must not exceed the permissible leakage current values according to DIN VDE 0751-1:2001-10, Table F.1, line "device leakage current for units according to the remarks 1 and 3" of 2.5 mA.
- Measure and record the current line voltage. If the measured line voltage deviates from the nominal voltage, correct the measured value to the value that corresponds to a measurement at the nominal value of the line voltage.
- Document the measuring method (differential measurement or direct measurement) and the measuring instrument used (designation and serial number).
- Separate the completed report page from these instructions and file it in the system folder or logbook with the existing reports.



Customer documents

Hand over the customer documents to the customer.

Country-specific acceptances

- Perform country-specific acceptances (DHHS / RÖV ...)

Installation report

NOTE

The manufacturer of this product requires information and the legislator required evidence as to whether a product delivered without defects from the factory continues to have the required and certified quality properties after installation and start-up.

Therefore it is absolutely necessary that the installation report with the installation and start-up data is sent promptly after completion of the work to the address stated on the installation report.

You will find the installation report in the system folder or logbook of the product.



- Complete the installation report and send it promptly to the address stated on the report.

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Lifting column and C-Arm movements

System: POWERMOBIL

Material number:

Serial number:

Customer-specific ident number:.....

Movement	In order Yes / No	Name	Date	Initials
Release/apply brakes				
Lifting column upwards movement				
Lifting column downwards movement				
EMERGENCY_STOP_button function				

Tab. 1

2 - 2 Lifting Column and C-Arm Movements / Protocol

Remarks:

Date	Remarks	Name	Signature

Tab. 2

Protective conductor resistance report

System:

Material number:.....

Serial number:

Customer-specific ident number.....

	Protective conductor resistance					
	First measured value	Repeat measurements measured value				
Measuring point1: _____						
Measuring point 2: _____						
Measuring point 3 _____						
Measuring point 4 _____						
Measuring point 5 _____						
Measuring point 6 _____						
Measuring point 7 _____						
Measuring point 8 _____						
(*1) Measuring circuit						
Measuring instrument Type:						
Measuring instrument Ser No.:						
Measuring instrument calibrated to:						
Assessment:	n.a.					
Date:						
Name:						
Signature						

Tab. 1

(*1) Measuring circuit: See Fig. 1, next page

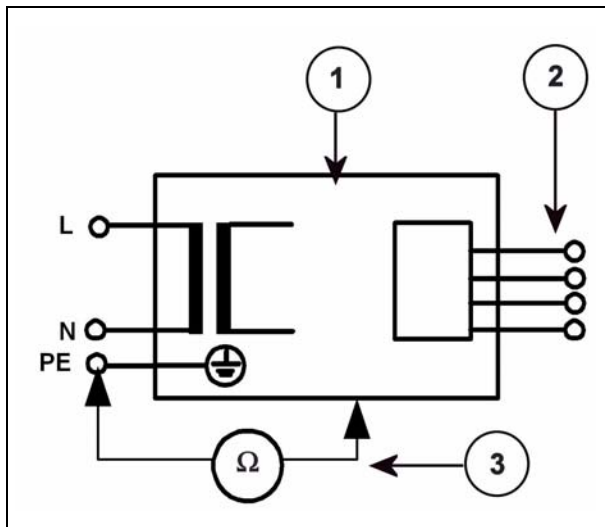
Measuring circuit

Fig. 1 Measuring circuit for measuring the protective conductor resistance for units that are separated from the power supply according to DIN VDE 0751-1:2001-10, Fig. C2.

1 = Measuring arrangement (measuring instrument)

2 = System

3 = Application part (if available)

Remarks:

Date	Remark	Name	Signature

Tab. 2

Device leakage current report

System:

Material number:.....

Serial number:

Customer-specific ident number.....

Device leakage current						
	First measured value	Repeat measurements Measured value				
Device leakage current (highest measured value) [mA]						
Line voltage during the measurement [V~]						
Device leakage current, corrected value [mA]						
(*1) Measuring circuit:						
Measuring instrument Type:						
Measuring instrument Ser-No.:						
Measuring instrument calibrated to:						
Assessment:						
Date:						
Name:						
Signature:						

Tab. 3

(*1) Measuring circuit: See Fig. 2 and Fig. 3, next page

Measuring circuit

Direct measurement.

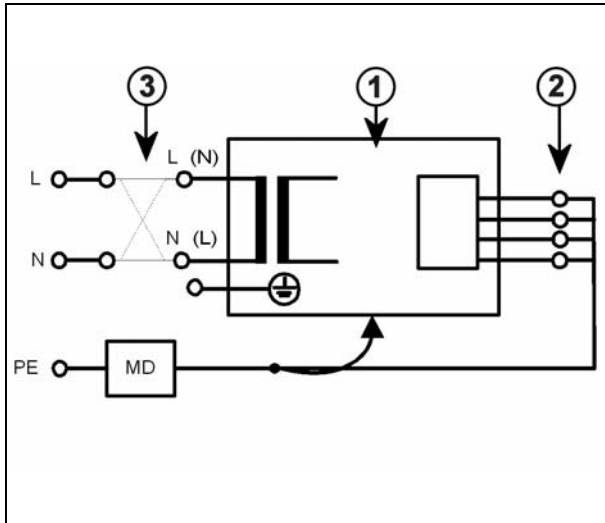


Fig. 2 Measuring circuit for direct measurement of the device leakage current according to DIN VDE 0751-1:2001-10, Fig. C5 for protective class I.

1 = System

2 = Application part I (if available)

3 = Measuring arrangement (integrated in the measuring instrument)

Differential measurement

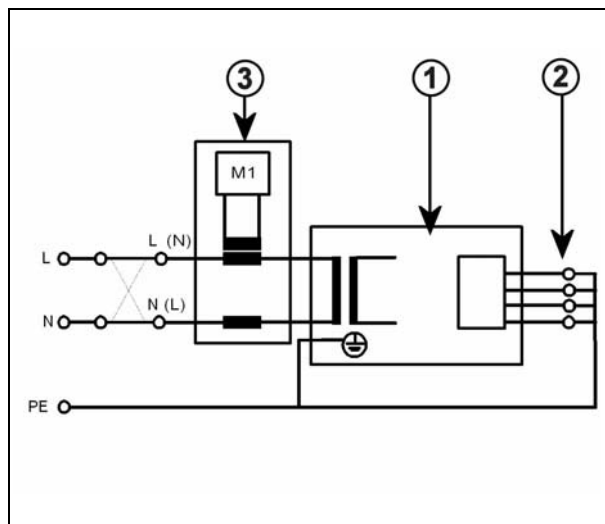


Fig. 3 Measuring circuit for direct measurement of the device leakage current according to the differential current method according to DIN VDE 0751-1:2001-10, Fig. C6 for protective class I.

1 = System

2 = Application part I (if available)

3 = Measuring arrangement (integrated in the measuring instrument)

Remarks:[illegible]

Tab. 4

[illegible]

Tab. 4

Chap. 0 Cover page, revision status, table of contents changed.

Chap. 1 to 3 Adaptation to standards

Adaptation to internal working instructions

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